DOCUMENT RESUME

ED 170 708 **CS 004 807**

AUTHOR Steinberg, Danny D.

TITLE Why Children Can't Read: Meaning, the Neglected Factor.

PUB DATE Aug 78
NOTE 9p.; Paper presented at the Annual Meeting of the American Psychological Asscciation (86th, Toronto, Canada, August 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Beginning Reading; Early Childhood Education; *Learning Processes; Phoneme Grapheme Correspondence; Preschool Children; *Reading Instruction; Reading Research; Semantics; *Sight Method; *Teaching Methods; Word Recognition

ABSTRACT

Teaching children to read letters first is regarded by many theorists as the foundation on which the teaching of words should be based. To test this assumption, 26 nursery school children were presented four items (two letters and two words) in a paired associate learning paradigm. The subjects were randomly divided into two groups for the purpose of determining what effects the speech names of letters and words have on the learning of the orthographic forms. The results indicated that written words were easier to learn than written letters and that meaning is a vastly more influential variable than visual perceptual complexity. These findings suggest that a good method of teaching reading would be one in which whole words are taught to the child, with the sound values of letters either learned by induction or taught at a later time. (RI)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED170708

Why Children Can't Read: Meaning, The Neglected Factor

Danny D. Steinberg
University of Hawaii
Department of English as a Second Language

Abstract

Teaching children to read letters first is regarded by many theorists as the foundation on which the teaching of words should be based. This study provides evidence bearing on this question by testing whether letters are easier to learn than words. Twenty-six nursery school children served as subjects. Each learned 4 items, 2 letters and 2 words, in a paired-associate learning paradigm.

It was found that written words are easier to learn than written letters and that the variable of meaningfulness is vastly more influential than that of visual perceptual complexity. A teaching method involving the teaching of whole words first is suggested.

NOTE: This paper was presented to the American Psychological Association at its annual meeting for 1978 in Toronto.

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Danny D. Steinberg

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

C 5004 807

Why Children Can't Read: Meaning, The Neglected Factor

Introduction

If methods for teaching reading are surveyed, we may observe that there is high agreement on one basic principle, which is that children should first be taught individual letters, i.e., their shapes and associated sounds. The learning of letters is regarded as the foundation on which the teaching of words is based. Phonics methods, for example, embody such an approach. However, while the letter-first approach finds widespread acceptance among reading educators, experimental evidence supporting that approach has not been provided.

The present investigation is designed to provide scientific evidence which bears on this problem by testing whether letters are easier to learn than words. In exploring the problem, the effects of two variables are separated. These are the orthographic form of the letter and word, and, the speech sound which is associated with the letter and word.

Method

Subjects. The subjects were 26 American nursery school children from a U.S. base in Japan. All were native English speakers. There were 15 boys and 11 girls from 3 to 5 years of age.

Materials. The subjects were presented a total of 26 alphabet letters and 26 words. The letters were the entire small set from a to z. The words each began with a different letter of the alphabet set, except for x which appeared in the second position, in explode. The words were varied with respect to grammatical class.

Each subject was presented four items for learning: 2 letters and 2 words. A total of 13 such item sets were presented. These sets

are shown in Table 1. It will be seen that the same set of four items was presented to two subjects. Thus, for example, Item Set #1 of finish, dollar, a and n were given to subjects #1 and #14. The letter and word items were arranged so that each set began with a different letter. Also, words which were of different grammatical classes were paired together. Each pair of word items was equated for length.

The words were pronounced as they usually are, and the letters were called by an essentially phonic pronunciation. The pronunciation of letters is also shown in Table 1.

Procedure. The subjects were randomly divided into two groups, Usual Speech Names and Reversed Speech Names, for the purpose of determining what effects the speech names of letters and words have on the learning of the orthographic forms. Subjects of the Usual Speech Names group, subjects #1 to 13, had their items called by their usual speech names, e.g., for Subject #1, the orthographic forms of finish, dollar, a and n were called [finiš], dalər], [æ] and [nə], respectively. However, subjects of the Reversed Speech Names group had the names of the letters and words reversed. Items A, B, C and D, as shown in Table 1 were reversed as follows: the name of Item A was exchanged with the name of Item C, and the name of Item B was exchanged with the name of Item D. Thus, for example, Subject #14 was given the written forms of finish, dollar, a and n with the speech names of [æ], [nə], [finiš] and [dalər], respectively.

Each subject was given 3 familiarization trials and 9 test trials in a paired-associate learning paradigm. The presentation order of items for trials was randomized. Each subject was pretested for knowledge of letters of the alphabet. Children who could identify more than 2 letters were not kept as subjects. Most children, however, were

unfamiliar with letters. (Sesame Street had only recently begun to be broadcast on the base television station.) The experimenter who presented the items was one of the American mothers from the base, and was a monolingual English speaker.

Scoring. The total number of correct responses for each of the four items was calculated for each subject. Since 9 test trials were given, scores could range from 0 to 9 on each item. In those cases where a subject gave correct responses to all items for two trials in succession, the remaining trials were not presented. The subject, however, was assigned a score which treated all remaining trials as having correct responses.

Results and Discussion

Word and Letter Differences. The means and standard deviations for the word and letter written forms under both the Usual and Reversed Speech Names conditions are shown in Table 2. It will be seen that the overall mean for the word speech names (5.93) is higher than that for the letter speech names (2.58). An Analysis of Variance indicates that this difference is significant [$F(1,24) = 60.84$, $p < .001$]. Thus, whether the written forms are words or are individual letters, they are easier to learn when called by word speech names.

Meaningfulness and Perceptual Complexity. The results of this experiment clearly show that written words are much easier to learn than letters, being learned at twice as fast a rate or more. It is further shown that the reason for this outcome is due to written words being associated with spoken words, for, when letters were associated with spoken words, they too were learned with comparable ease. Since it was not the sounds alone of the words that caused the

significant difference in learning, it is clearly the meaning which is associated with those sounds that is influencing the rate of learning.

Such results should not be surprising, in one sense. For if a century of experimental psychology has demonstrated anything, it is that meaningful items are easier to learn than less meaningful or nonsense ones. What is surprising, however, is how powerful that variable is and what a relatively minor influence the variable of visual perceptual complexity has in the learning of reading. Thus, we find, for example, that the letter e is more difficult to learn than the written word heavy, even though heavy includes the letter e along with four other letters.

The experiment does show that perceptual complexity of shapes does to some extent affect the rate of learning. For, it was found that when written words and written letters were both presented in association with spoken words, the written letters were significantly easier to learn. For example, when the written form of e and the written form of taxi were both called by the speech name of "taxi", the form of e was learned faster than taxi. This finding indicates that the written form which is simpler will be learned faster, when meaning (as conveyed by the spoken word) is held constant. Thus, perceptual complexity does influence learning, but to a much lesser degree than meaning.

Optimum Teaching Methodology. A good method of teaching reading which is suggested by the results is one in which whole words are first taught to the child. Then after a sufficient vocabulary has been acquired, the child could be taught the sound values of letters through phonics or other methods (if the child has not already learned such sound values through induction). In this way, the highly potent variable of meaningfulness could be beneficially exploited.

Table 1

Stimulus Materials

Item Set	Written Word A	Written Word B	Written Letter C	(Pronunciation)	Written Letter D	(Pronunciation)	Subject
1	finish (V)	dollar (N)	a	[æ] (pat)	n	[nə]	1, 14
2	quick (A)	laugh (V)	b	[bə]	o	[a] (pot)	2, 15
3	naughty (A)	explode (V)	c	[sə]	p	[pə]	3, 16
4	violin (N)	across (O)	d	[də]	q	[kwə]	4, 17
5	taxi (N)	such (O)	e	[e] (pet)	r	[rə]	5, 18
6	zebra (N)	chase (V)	f	[fə]	s	[sə]	6, 19
7	mile (N)	with (O)	g	[gə]	t	[tə]	7, 20
8	gallop (V)	yellow (A)	h	[hə]	u	[u] (putt)	8, 21
9	join (V)	into (O)	i	[i] (pit)	v	[və]	9, 22
10	use (V)	but (O)	j	[jə]	w	[wə]	10, 23
11	knife (N)	heavy (A)	z	[zə]	x	[eks]	11, 24
12	rain (N)	poor (A)	k	[kə]	y	[yə]	12, 25
13	old (A)	the (O)	m	[mə]	l	[lə]	13, 26

Note: N = Noun, V = Verb, A = Adjective, O = Other.

The symbol of ə represents the vowel schwa.

Table 2

Word and Letter Results: Means and Standard Deviations

	Speech Word		Speech Letter		Total	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Written Word	5.00	4.11	3.08	3.76	4.04	4.15
	(Usual)		(Reversed)			
Written Letter	6.88	3.58	2.08	3.61	4.48	5.08
	(Reversed)		(Usual)			
Total	5.93	6.01	2.58	2.63	4.26	4.64

Note: The Usual and Reversed Speech Names conditions are indicated in parentheses.